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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/663,655	09/17/2003	Yong-Chen Chung	LOU 111	3805

7590

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EXAMINER

NGUYEN, THUKHANH T

ART UNIT

PAPER NUMBER

1722

DATE MAILED: 05/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/663,655

Applicant(s)

CHUNG ET AL.

Examiner

Thu Khanh T. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 February 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-4, 6-7 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burgin et al (5,947,027) in view of Chou (6,482,742).

Burgin et al teach a printing apparatus with inflatable means for advancing a substrate towards the stamping surface, comprising an imprint unit (100) having a first molding plate (102) and a first stamping plate/surface (105), a carrier unit (110) having a second mold plate (126) and a substrate (124) mounted on the second mold plate, an inflating membrane (112) is inflated by a gas pressure source (not shown, col. 7, lines 11-24) and is connected to the second mold plate (126) to allow the adjustment of the substrate and the imprint surface (105, col. 2, lines 13-18).

However, Burgin et al fail to disclose that the inflating membrane is a hermetically enclosed chamber contained a predetermined amount of fluid.

Chou ('742) discloses a in imprint lithography apparatus, comprising an imprinting unit (10) and a carrier (20) supporting a second mold plate and a substrate (21), a fluid pressing for enhancing resolution and providing a high uniformity over an enlarged area (see abstract), which is accomplished by: 1) subjecting the mold to jets of pressurized fluid or 2) sealing the mold against the film and disposing the resulting assembly in a pressurized chamber (or positioning

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the sealing device hermetically isolates a region between the layer of mask material and the mold from pressurized fluid in the pressure chamber – claim 27).

It would have been obvious to one of ordinary skill in the art at the time the applicant's invention was made to modify Burgin et al by providing a hermetically enclosed inflating chamber with a predetermined amount of fluid as taught by Chou because the predetermined amount of fluid in the hermetically enclosed inflating chamber would enhance resolution and high uniformity over an enlarged area.

In regard to claims 2-3, the inflating membrane (112) is located in between the substrate (124) and the mold plate (126).

In regard to claim 4, the inflating member is made of elastomer material (col. 2, lines 13-14).

In regard to claim 6, the apparatus further discloses positioning platform, or support plates (116, 118) connected to the molding plates.

In regard to claim 7, the driving source is a hydraulic cylinder (136).

In regard to claim 8, the apparatus is capable of imprinting microelectronic devices that could be made of a polymer, a metal or a non-metal material.

In regard to claims 10, wherein the mold and the substrate are mounted on the imprint unit and the carrier unit by a vacuum suction force (150) or mechanical force or connecting members (132).

3. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Burgin et al ('027) in view of Chou ('742) as applied to claims 1-4, 6-7 and 10 above, and further in view of Gutowski et al (5,648,109).

Burgin et al fail to disclose a sensor for sensing the pressure applied to the inflatable member.

Gutowski et al disclose an apparatus for diagram forming, comprising a plurality of inflatable members (56-60) inflatable against the molding diaphragm (26) and plurality pressure sensors provided at each member (col. 13, 1-5).

It would have been obvious to one of ordinary skill in the art at the time the applicant's invention was made to modify Burgin et al by providing pressure sensors as taught by Gutowski et al so that in inflation of the inflatable member can be automatically controlled.

4. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Burgin et al (5,947,027) in view of Chou ('742) as applied to claims 1-4, 6-7 and 10 above, and further in view of Gorczyca et al (6,787,071).

Burgin et al disclose an imprint apparatus as described above, but fails to disclose an anti-adhesion coating layer on the mold surface.

Gorczyca et al disclose a stamper comprising a molding surface (21, 22) having surface-finishing layer such as lubricant layer (col. 7, lines 23-25) or a Teflon layer (col. 4, lines 46-47).

It would have been obvious to one of ordinary skill in the art at the time the applicant's invention was made to modify Burgin et al by providing a surface finishing layer such as lubricant or non-stick material as taught by Gorczyca et al in order to facilitate the removal of the finished product after printing.

5. Claims 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burgin et al ('027) in view of Chou ('742) as applied to claims 1-4, 6-7 and 10 above, and further in view of the WO 01/42858 reference (WO'858).

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Burgin et al fail to disclose a heating member and a cooling member mounted on the imprint unit and the carrier unit.

The WO'858 reference discloses a lithography apparatus comprising heating means (15) and cooling means (16) connected with the mold plates (2, 4) for heating and/or cooling the substrate (5).

It would have been obvious to one of ordinary skill in the art at the time the applicant's invention was made to modify Burgin et al by providing heating and cooling means as taught by the WO'858 reference in order to control the temperature of the substrate during the imprinting process.

Response to Arguments

6. Applicant's arguments with respect to claims 1-12 have been considered but are moot in view of the new ground(s) of rejection.

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thu Khanh T. Nguyen whose telephone number is 571-272-1136. The examiner can normally be reached on Monday- Friday, 6:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gupta Yogendra can be reached on 571-272-1316. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TN


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